they of the necessity of cover for their statues, that if placed against a building, canopied niches were made to receive them. As to material, bronze is most certainly the best that can be obtained, but, independent of its great cost, it soon loses the beauty of its fine arrises by the great accumulation of dirt which prevents their being seen; and, besides, I have a strong idea that in many towns where large chemical works are carried on, a great decomposition of its finer parts would sooner or later take place. White statuary marble is, for reasons before stated, most unsuitable for exposure to the weather, but have we not in our country materials equally good and much better suited to the purpose? Who will say that if a statue must be denuded of shelter Anglesey marble would not meet every requirement, or if placed under cover there are plenty of quarries in Yorkshire and Derbyshire giving a first-rate stone—fine in its component particles, but solid in its texture, and taking a good weather face? I will not trespass longer on your time in saying how that, in the so-called dark ages, beauty of design and veneration for the departed were most admirably blended with utility to the living; how one memorial had a reservoir of spring water attached, another served as a market-cross, while a third, with the statue of its founder in the court-yard, still shelters the poor and afflicted.

C. W. Orford.

CONSTRUCTION OF ENGINE CHIMNEYS.

A correspondent who forwarded us a design for an engine chimney 150 ft. in height from the ground, with a pedestal 9 ft. 6 in. square, and a diameter for the shaft of 8 ft. at bottom and 5 ft. at top, the internal diameter of the flue 3 ft. 6 in. all the way up, is surprised at our refusal to engrave it, because he thinks it would tend "to elicit different opinions." It could only elicit one opinion as regards itself, namely, that the diameter is much too small for the height. The arrangements required by the official referees for metropolitan buildings, in respect of engine chimneys, will serve to show this without further comment. They require that the base of the footings should be one half longer than the base of the shaft, and be placed as low as the base of the footings of any adjoining wall or building. If the shaft be square, the height of it must not exceed *ten times the length of the side at the top of the footings; if circular, twelve times the lower diameter*. The shaft must diminish in size upwards, and be at least one-third less at the top than it is at the bottom. It must be bonded every six courses with hoop-iron, lapped at the edges. The projection at head of chimney, if any, must not exceed three-fourths of the thickness of the brickwork from which it projects.

THE VENTILATION OF MINES.

INSTITUTION OF CIVIL ENGINEERS.

On the 10th inst. Mr. William Cubitt, President, in the chair, the subject of the paper read was, "The Ventilation of Collieries, theoretically and practically considered," by Mr. W. P. Struvé.

The author commenced by showing that the general principles which ought to govern the ventilation of collieries, were—

1st. That a current of air through the channels of collieries, at a velocity of five feet per second, was sufficient for most purposes.

2nd. That a current exceeding that velocity would only be attained at the expense of leakage and other evils.

3rd. That in order to obtain the requisite supply of fresh air, the channels of a colliery or mine ought to be enlarged, according to the exigency.

In the process of laying out a mine, a subdivision occurred by which the workings were apportioned into numerous compartments, which facilitated the system of splitting the current of air, or diverting it into numerous channels, giving to each compartment a separate and, therefore, more effective ventilating force: at the same time the area of the channel was enlarged, and the aggregate length of the air tube shortened, so that it was quite impracticable to pass through the workings of a mine, three hundred cubic feet of air per minute for each man employed.

The details of two experiments at the Eglesbush and Yuis David Collieries, where the air was pumped out by Mr. Struvé's Mine Ventilator, showed that a large proportion of the air was drawn from the old workings and the "goaf," or broken ground surrounding the colliery, and did not come down the intake shaft, and traverse the actual workings, as it ought to have done.

In both these cases, the enlarging and splitting of the air channels, so as to reduce the velocity of the air to about three feet or four feet per second, would have produced most beneficial results.

These principles were shown to have been lost sight of in the majority even of the great collieries, and the power of rarefaction by a furnace was trusted to for dragging the long column of air over and through innumerable impediments.

The experiments of Mr. Nicholas Wood, Mr. G. Elliot, Mr. H. Vivian, and other mining engineers, were quoted, to demonstrate the insufficiency of the "steam jet," as a means of promoting ventilation, showing that it was a wasteful application of power, when compared with the steam force employed to work the lecturer's own Mine Ventilator at the Eglesbush Colliery.

The discussion upon this paper was announced to take place on Tuesday, 26th, when Mr. Gurney will perhaps say a word in reply.

Miscellanea.

On directing the Course of Balloons.—The writer of the article on the above subject in The Builder of last week is probably not aware that what he suggests was proposed many years ago in France. On December 2, 1783, the Academy of Lyons offered a prize of 1,200 livres for the best dissertation on the following subject:—"To find the most certain and most simple method of directing the air balloon horizontally and at pleasure." One hundred and one essays were presented, and amongst them one by M. Le Normand, of Montpelier, proposing to employ steam. A boiler was to be heated by a large lamp in the car. Steam was to be conducted by tubes up to the equator of the balloon, and was to escape at each side of it through a horizontal tube at right angles with the diameter. This was thought to be the best plan amongst the whole of those received by the academy, but unfortunately one thing had been overlooked, or perhaps had not yet been made known. A balloon, in passing from one current of air to another, revolves on its axis, and therefore, instead of going in one direction, it would go in many directions perhaps not desired. We must have some lighter power than a steam-engine for propelling a balloon: the weight of the boiler, full of water, &c., would be objectionable. Aero.

Guidance of Balloons.—Another attempt is being made at Paris to apply the principles of piscatory locomotion to ballooning. A completely fish-shaped balloon has been formed at the Hippodrome, with two small rudders for a tail, one for steering in ascent and descent and the other in horizontal movement. The fins are represented by two short and wide oars, moved by a simple mechanism. The whole apparatus is banded with whalebone, and covered with network. The model is rather diminutive, measuring 5 yards only in length, and containing 1,200 litres of gas; but experiments with it are said to have been remarkably successful. The (re-) inventor is a M. Arnault.

British Archæological Association.—A public meeting was held November 13th, Mr. T. J. Pettigrew, V.P. in the chair. Exhibitions were contributed, by Mr. H. W. Rolfe, a drawing of a very early spur; by Mr. C. R. Smith, British coins and gold coins of Justinian; by Mr. Russell, seals, one reading "Crede Michi," discovered Nov. 8, 1850,—all these were found in the Thames;—by Mr. Warren, a bronze weight, having a lion passant on one side and a castle on the other, with an obscure inscription: Mr. Planché suggested that it might have belonged to the city of Norwich;—by Mr. Bell, of Gateshead, rubbings of inscriptions from bells and other antiquities, which had been bought by a dealer in old metals at Newcastle; by Mr. Forster, carvings of animals, foliage, &c., found on the back of the chimney-piece of the Old Queen's Head at Islington, when that house was pulled down, and which would belong to about the time of Henry VII. Dr. Bell read a paper on the history of famous Stones which have been used at various periods in the coronation of kings, and for other important national purposes, showing that these were usually surrounded by others, frequently of a smaller size, on which sat the officers of state or other important personages; and that such collections of stones are not only mentioned in the earliest histories, but are to be found in every country both in the old and new worlds. Many interesting facts were mentioned respecting the combination of particular numbers in the arrangement of these monuments. The history of the coronation stone at Kingston, and that in the coronation chair at Westminster, formed an important part of the paper.

New Church, Margaret-street.—Sir: I am requested by some of the principal subscribers to the church about to be erected on the site of Margaret Chapel, Margaret-street, to forward to you the following particulars with reference to your notice respecting the laying of the first stone. 1. It is not "Mr. A. B. Hope's church," but is to be built by subscription, Mr. Hope being only one out of several liberal contributors. 2. The architect has not *carte blanche* for the expense. The edifice will be constructed under contract in the usual way for a limited sum. 3. No "two religious houses," in the sense in which these words appear to be used, are to be built. Two houses are to be erected: one for the residence of the clergy, and another for the choir and the schoolmaster, in an ordinary mode.—John David Chambers,—one of the treasurers of the subscription fund.

Terra Cotta Decorations.—Messrs. Bowers and Baddeley, of the Staffordshire potteries, have recently submitted to us some architectural decorations made from a combination of Staffordshire clays. The clay when properly mixed is subjected to a great pressure, in order to drive out the fixed air: having undergone this process, the clay is moulded and baked in the usual mode of baking earthenware. From the great pressure employed in the process of preparing the clay and in moulding it, as well as from the effect of certain ingredients employed in the process, the clay after having been baked assumes a perfectly vitreous character, and loses its absorbent properties. Bricks and ornaments of all kinds thus formed are impervious to wet, while from their non-absorbent qualities they may easily be painted. In work of this description the difficulty is to prevent warping and obtain straight lines. The patentees, however, speak with confidence of their ability in this respect. A good field is open to them.

Portland Harbour of Refuge.—We understand that a number of additional tram-waggons have lately been received at the works, with a view to the employment of a still larger number of convicts, on the arrival of whom this enterprise will be carried on with increased rapidity. Amongst the machinery to be observed on these works may be mentioned a gigantic crane, on a moveable platform, intended for the raising of stones from the recesses of the quarries, and which is capable of sustaining, with ease, the weight of sixty tons. An engine has also been recently erected for the chemical impregnation of the driving piles for their preservation, by a new and ingenious process, by which they are rendered impervious to the action of water.

Widening of Chancery-lane.—A meeting of the inhabitants of Chancery-lane and its neighbourhood, was held at the Mechanics' Institute, in the lane, Mr. Taylor in the chair, when a committee was appointed, and resolutions were unanimously passed, recommending a public subscription to make up the sum requisite to open the Holborn end of the lane (in all 2,000*l.*) and expressive of the regret of the meeting at the want of some public institution for the removal of public nuisances, such as the obstruction in question. The chairman had already collected upwards of 150*l.* and the pavement commissioners, we believe, are still ready to contribute 750*l.*; so that the negociation with Mr. Steel for the corner space at 1,000*l.* appears to be already secure.

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